



**JOHN DEERE**

John Deere Intelligent Solutions Group  
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October 11, 2016

**Via ECFS**

Marlene H. Dortch, Secretary  
Federal Communications Commission  
445 12th Street, S.W.  
Washington, D.C. 20554

**Re: Deere & Company *Ex Parte* Submission: Mobility Fund Phase II (WC Docket No. 10-90; WT Docket No. 10-208)**

Deere & Company (“Deere”) submits this *ex parte* filing to urge the Commission to adopt policies and rules for Phase II of the Mobility Fund (“MF-II”) that specifically recognize the need to promote 4G LTE deployment that will cover areas of agricultural operations.

**I. Introduction**

Deere is a world leader in the manufacture of agricultural, turf, construction, and forestry equipment, diesel engines, and other machinery. Deere provides agricultural and other equipment and services to customers that cultivate, harvest, transform, enrich and build upon the land to meet the world’s dramatically increasing need for food, fuel, fiber, and infrastructure. Deere has been delivering innovative equipment since 1837, and today is pioneering state-of-the-art data and information solutions designed to greatly enhance agricultural productivity and sustainability. Deere furnishes information and communications technology-integrated systems across all of its agricultural equipment line (as well as Deere’s construction and forestry equipment). Machine-to-machine (“M2M”) communications and machine-to-farm communications have become integral components of daily agricultural operations. Modern agricultural operations increasingly require high-speed broadband. As a leading global supplier to the agricultural sector, Deere is intensely interested in the timely deployment of high-speed fixed and mobile broadband facilities in the nation’s rural areas, and in particular, to areas of agricultural activity.

**II. The Public Interest Requires That Mobility Fund Phase II Rules Promote 4G Coverage in Agricultural Areas**

Deere applauds the FCC’s commitment to move forward with MF-II and to rely on more accurate measurements of where 4G LTE coverage is available. Consistent with the universal service principle that advanced telecommunications and information services should be available in all areas of the nation, MF-II should increase 4G LTE wireless coverage of rural America

where people live and work.<sup>1</sup> For many Americans in rural America, work is closely tied with the agricultural sector; specifically, for farm owners and workers, the areas with a need for wireless coverage are croplands. MF-II funds directed solely to cover roads or population centers will not adequately address the need for wireless coverage in cropland areas.

It is Deere's experience that the cropland areas where farming occurs still lag far behind in adequate fixed and mobile broadband access. The urgent need to address this shortfall was recently expressed in a letter to Chairman Wheeler by U.S. Senators Roger Wicker (R-MS) and Joe Manchin (D-WVA), and a bipartisan group of 24 other Senators representing states with significant rural areas and in which agriculture is a major generator of economic activity.<sup>2</sup> Those 26 Senators joined in highlighting the growing unmet demand, and urged the Commission to do more to address the needs of rural Americans in the agricultural sector for high-speed broadband, including particularly mobile services:

“Croplands and ranch lands have lagged behind in adequate mobile coverage, even as demand for coverage has grown. To address this coverage gap, we urge you to consider a metric of broadband access in croplands (and farm buildings), or some other geographic measurement, in addition to road miles, to identify these areas of greatest need. “Cropland” coverage can be assessed using United States Department of Agriculture data for crop operations, the United States Geological Survey's Land Use classification, or other databases.”<sup>3</sup>

As the Commission designs Phase II of the Mobility Fund, it should account for the growing need for advanced telecommunications capability in active agricultural areas — areas that are vital economic drivers for rural communities and the source of livelihoods for a majority of rural Americans. Deere continues to urge the Commission to take agricultural areas into account in allocating MF-II funds, as discussed in Deere's comments filed in the above-referenced dockets.<sup>4</sup> ***Specifically, Deere urges the FCC to base MF-II bidding and coverage units on a weighted average of population and cropland acreage and to adjust construction milestones and coverage requirements to ensure that carriers construct networks that cover cropland in addition to population centers.*** The significant public interest benefits of broadband deployment that lie at the heart of Section 254, Section 706, the National Broadband Plan, and the Commission's many other efforts to facilitate such deployment cannot be made fully

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<sup>1</sup> *Connect America Fund*, Report and Order and Further Notice of Proposed Rulemaking, 26 FCC Red 17663, para. 53 (2011) (“mobile networks capable of delivering mobile broadband and voice service in areas where Americans live, work, or travel.”) (“*2011 CAF Order*”).

<sup>2</sup> Letter to Chairman Tom Wheeler, FCC, from United States Senators Wicker, Manchin, *et. al.* (July 11, 2016) (*Senate Letter*). A copy of the Senate letter is attached as Exhibit 1.

<sup>3</sup> *Senate Letter* at 2.

<sup>4</sup> *See Universal Service Reform -- Mobility Fund*, WT Docket No. 10-208 *et al.*, Comments of Deere & Company (filed Aug. 8, 2014); Reply Comments of Deere & Company (filed Sept. 8, 2014).

available to the nation's rural communities without expanding wireless broadband availability across croplands.

### **III. Need for Mobile Broadband on Croplands**

Much of the future of enhanced farming efficiency and productivity turns on the grower's ability to gather, process, and transmit data using advanced information and communications technologies. Wireless broadband service is a necessary technology option (in addition to fixed broadband) to achieve cost-effective coverage for farm-intensive rural areas with significant tracts of cropland.

Beginning in 2006, John Deere started equipping its construction fleet with telemetrically enabled systems. In 2011, Deere started equipping large agricultural self-propelled vehicles with it as well. These telematics systems are enabled through JDLink™, John Deere's proprietary machine-to-machine and machine-to-network data transmission system. Technology-equipped machine solutions enable agronomic decision-making to advance productivity, improve producer profitability and global competitiveness, and optimize inputs for continuous environmental improvement.<sup>5</sup> As machine populations continue to grow and farmers look to technology solutions that require real time, high speed machine connections, the demand and reliance on rural broadband will increase.

Bringing wireless broadband connectivity to cropland will provide farmers the ability to make real-time data transfers and design prescriptions that minimize the amount of necessary seed, fertilizer and pesticides, reduce costs for fuel, labor, water, and dynamically identify best practices for fields in a given location. With superior, precise, site-specific data, a farmer can analyze and carefully adjust his or her farming practices to be the most efficient, most economic, and most environmentally friendly possible, thus improving productivity and sustainability. In this regard, Deere strongly agrees with the recent Senate letter:

“More than ever before, U.S. farmers and ranchers are demanding reliable, high-speed mobile broadband services. Mobility is essential for new precision agriculture technologies to deliver productivity gains and environmental sustainability. These technologies are transforming U.S. agriculture as American farmers and ranchers seek to feed, fuel, and clothe an ever-increasing global population using limited land, water, and other resources.”<sup>6</sup>

Enabling farmers to utilize machine-to-machine data fully requires significant improved communications capacity and access to high speed mobile broadband. Today, many of Deere's customers are challenged with a lack of adequate cellular coverage in the fields where

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<sup>5</sup> Deere's FarmSight™ solution, for example, is dependent upon broadband data flow to provide products and services such as Machine Optimization, Logistics Optimization and Agronomic Decision support.

<sup>6</sup> *Senate Letter* at 1.

agricultural equipment operates. Deere's JDLink™ data service, for example, currently relies on the cellular telephone network to transmit telemetric machine operation data. The lack of reliable coverage needed for these solutions to transmit telemetric data from the machines is already a concern, but the shortfall in coverage will only become more problematic as data volumes increase. Due to significant gaps in cell coverage in rural areas where farm machines operate, today JDLink™ data transmissions have only a 70% successful call completion rate. Absent significant improvements in cell coverage in cropland areas, Deere expects that this figure will drop to about 50% in two to three years as machine populations grow and agricultural demand for broadband services increases.

#### IV. **Agricultural: Where Rural America Works**

Farming is the lifeblood of rural communities and does not exist without people to support and tend to it, such as in:

- Planning (agronomists, co-ops, landlords, hired hands)
- Planting (seed suppliers, plow and tillage equipment)
- Protecting (insecticides, herbicides, and fertilizing)
- Production (contracting combines, grain storage, transport and milling)

Modern farming machines-with-modems involve an operator who is communicating separately by cell phone and often using a tablet in the machine's cab. In 2014, 17.3 million full- and part-time jobs were related to agriculture—about 9.3 percent of total U.S. employment.<sup>7</sup> Of this, direct on-farm employment provided 2.6 million jobs.<sup>8</sup> Employment in related industries, food and beverage manufacturing and food services jobs, supported another 14.7 million jobs.<sup>9</sup> Because so many Americans work on cropland, the Commission should count agricultural machine-to-machine broadband communications and operator mobile devices when analyzing the potential benefits of MF-II support in rural areas.

If the Commission focuses on providing only fixed broadband to farm buildings, it will overlook the important need for wireless coverage of cropland necessary to fuel today's farming operations which, in turn, support essential economic activity and provide jobs throughout rural communities. U.S. agriculture and food related industries contributed \$835 billion to GDP in

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<sup>7</sup> *Agriculture and its related industries provide about 10 percent of U.S. employment*, UNITED STATES DEPARTMENT OF AGRICULTURE (USDA), <http://www.ers.usda.gov/data-products/chart-gallery/detail.aspx?chartId=40043&ref=collection&embed=True&widgetId=39734>.

<sup>8</sup> *Id.*

<sup>9</sup> *Id.*

2014, a 4.8% share.<sup>10</sup> Farm output alone was \$177 billion, or approximately 1% of GDP.<sup>11</sup> U.S. agriculture and food exports were \$133 billion in 2015,<sup>12</sup> with U.S. agricultural trade producing a trade surplus in 2015 of approximately \$19.5 billion.<sup>13</sup>

Production agriculture does not exist in urban or suburban areas where mobile broadband coverage tends to be focused, because it cannot. Rather, farms are “captive” to the geographies, soils, climate, water and available land required for growing food. Agriculture happens where geology and climate are favorable, not where other business factors or broadband conditions are favorable. Farms cannot move to areas of better broadband coverage; mobile broadband must move to farms where people actually live, work and function.

## **V. Mobile Coverage of Cropland Benefits More than the People Who Live and Work on Farms**

Today, high quality mobile broadband connectivity in cropland is important to ensure ongoing U.S. leadership in precision agriculture to feed the growing U.S. and world population. The U.S. population is projected to reach 417 million in the year 2060, an increase from 319 million today.<sup>14</sup> On a worldwide basis, we must double the food supply in the next 40 years, and do so in a sustainable manner if we are to feed tomorrow’s global citizens. Precision agriculture relies on the Global Positioning System (GPS) and geospatial data techniques for reducing inputs and increasing outputs, resulting in increased productivity to allow our producers to continue to feed us from the same amount of land and export our agriculture around the globe. Improvements in yields benefit consumers of goods produced on croplands, and improvements in chemical applications benefit the environment.

Darrington Seward explained to the Senate Subcommittee on Communications that his family farm could not manage their 22,000 acres of cotton, corn, soybeans and rice “productively or profitably without extensive use of precision agriculture technologies.”<sup>15</sup> Mr. Seward receives information wirelessly from “tractors, sprayers, combines, cotton pickers and fuel truck[s] is

<sup>10</sup> *What is agriculture’s share of the overall U.S. economy*, UNITED STATES DEPARTMENT OF AGRICULTURE (USDA), <http://www.ers.usda.gov/data-products/chart-gallery/detail.aspx?chartId=40037&ref=collection&embed=True&widgetId=39734>.

<sup>11</sup> *Id.*

<sup>12</sup> *Agricultural Trade*, UNITED STATES DEPARTMENT OF AGRICULTURE (USDA), <http://www.ers.usda.gov/data-products/ag-and-food-statistics-charting-the-essentials/agricultural-trade.aspx>.

<sup>13</sup> *Id.*

<sup>14</sup> Sandra L. Coby et. al, UNITED STATES CENSUS BUREAU, *Projections of the Size and Composition of the U.S. Population: 2014 to 2060* (2015), available at <http://www.census.gov/content/dam/Census/library/publications/2015/demo/p25-1143.pdf>.

<sup>15</sup> Statement of Darrington Seward of Seward & Son Planting Company, 1, 9 (2016), available at [https://www.commerce.senate.gov/public/\\_cache/files/86a9b24c-e124-4b4b-a701-f0fe165be074/F3297DD6CC57D51B9EA2A54F209F07E3.darrington-seward-testimony.pdf](https://www.commerce.senate.gov/public/_cache/files/86a9b24c-e124-4b4b-a701-f0fe165be074/F3297DD6CC57D51B9EA2A54F209F07E3.darrington-seward-testimony.pdf). (explaining that Mr. Seward manages Seward & Son Planting Company and Seward & Harris Planting Company, a family farming business in and around Louise, Mississippi. “Currently, we manage about 22,000 acres, mostly within a 10 mile radius of Louise in Humphreys, Yazoo, Sharkey, and Holmes counties at the southern end of the Mississippi Delta. We farm cotton, corn, soybeans, and rice.”) (“*Seward Testimony*”).

essential to [] day-to-day operations.”<sup>16</sup> Machines that cannot send or receive data wirelessly are unable to capture the productivity gains and cost savings that innovative technologies provide.

Mr. Seward also explained how precision agriculture allows farmers to deploy “variable-rate nutrient application to deliver in each part of the field the exact amount of nutrients called for.”<sup>17</sup> As a recent New York Times article recognized, “[u]sing location-specific information about soil nutrients, moisture, and productivity of the previous year, new tools, known as ‘variable rate applicators,’ can put fertilizer only on those areas of the field that need it (which may reduce nitrogen runoff into waterways).”<sup>18</sup> These techniques are thus key to environmental sustainability and responsible stewardship of rural lands and waters.

The economic impact of today’s agriculture technologies is significant. According to recent reports, data-driven decisions about irrigation, fertilization and harvesting can increase corn farm profitability by \$5 to \$100 per acre, and a recent 6-month pilot study found precision agriculture improved overall crop productivity by 15%.<sup>19</sup> But as detailed below, significant portions of rural areas do not have the same access to wireless broadband and therefore are being denied the full benefits that modern agricultural technology makes possible. Without wireless broadband on croplands, the significant public benefits of increased yield and decreased environmental impacts cannot be realized.

## VI. Private Investment is Not Bringing Wireless Broadband to Croplands

The statutory principles that govern universal service include providing access to advanced telecommunications and information service in “all regions of the Nation.” 47 U.S.C. §254(b)(2). Just as consumers living in urban areas enjoy 4G LTE coverage where they live and work, so too should rural consumer have access to 4G LTE coverage where they live and work.

Family farms make up 98.9% of U.S. farms and account for 89.6% of U.S. production.<sup>20</sup> The gross cash farm income for 89.4% of U.S. farms is less than \$350,000 annually per farm.<sup>21</sup> US Cellular estimates that a typical cell site needs approximately 900 subscribers at \$56.00 of average revenue per unit per month to achieve positive cash flow by year five.<sup>22</sup> Because farm workers will likely subscribe where they live, a carrier constructing a new cell site to cover

<sup>16</sup> Seward Testimony, at 3.

<sup>17</sup> Seward Testimony, at 2.

<sup>18</sup> Jayson Lusk, *Why Industrial Farms Are Good for the Environment*, THE NEW YORK TIMES (Sept. 23, 2016), [http://www.nytimes.com/2016/09/25/opinion/sunday/why-industrial-farms-are-good-for-the-environment.html?\\_r=0](http://www.nytimes.com/2016/09/25/opinion/sunday/why-industrial-farms-are-good-for-the-environment.html?_r=0).

<sup>19</sup> See Kurt Marko, Forbes, Precision Agriculture Eats Data, CPUC Cycles: It’s a Perfect Fit for Cloud Services (Aug. 25, 2015), available at: <http://www.forbes.com/sites/kurtmarko/2015/08/25/precision-ag-cloud/>.

<sup>20</sup> United States Department of Agriculture, *Distribution of farms and value of production varies by farm type*, available at <http://www.ers.usda.gov/data-products/chart-gallery/detail.aspx?chartId=40046&ref=collection&embed=True&widgetId=39734>.

<sup>21</sup> *Id.*

<sup>22</sup> *Universal Service Reform – Mobility Fund*, WT Docket No. 10-208 et al., Ex Parte Presentation of United States Cellular Corporation, slide 14 (filed March 1, 2016),

cropland will not gain additional farm worker subscribers. This means a single farmer might need to spend more than \$600,000 annually for a new cell site serving the farm if the provider were to achieve positive cash flow by year five.

Unfortunately, the cost of constructing new cell sites cannot be avoided by relying on Wi-Fi hot spots. Precision agriculture depends on stable, reliable high speed connections to equipment operating in remote locations. Deere has evaluated many options to provide reliable connectivity to its customers, including but not limited to high speed satellite uplinks with hotspots and repeaters, mobile cellular towers, high powered directional backhauls paired with WiFi, and direct satellite connections. None of these have shown to be suitable from a cost, reliability or bandwidth standpoint for Deere's customer needs. For example, in Deere's field testing using a custom designed WiFi radio and antenna and the maximum power output allowed by law, coverage rarely exceeds 3 miles at a cost of \$1,500 per node. The typical farmer does not have the human resources or expertise to maintain the hundreds of WiFi nodes that would be necessary in order to create a network to cover a farm that regularly spans a 25 mile radius. Although there have been small pockets of success for those few customers with the financial and other resources to create and maintain their own infrastructure, cellular 3G and 4G LTE continue to be the only technologies that provide the bandwidth, reliability and cost that are required by Deere's customers.

Iowa and Texas have recognized the economic importance of bringing broadband to cropland. In 2015, Iowa Governor Branstad signed legislation to promote greater mobile broadband deployment on croplands and a number of local providers have listed projects for the tax incentive program with the Iowa Department of Revenue.<sup>23</sup> In Texas, Commissioner Staples of the Texas Department of Agriculture has advocated that "[w]hen all Texans have access to broadband service it will allow a farmer in West Texas to be on the same playing field as a business executive on Wall Street."<sup>24</sup> Because private investment is not bringing broadband to croplands, MF-II should specifically assess broadband access in croplands to identify and support these areas of greatest need.

## **VII. Designing MF-II to Measure and Support Bringing Wireless Broadband to Cropland**

If the MF-II rules only measure the level of wireless broadband service to residential populations and road miles (or census blocks with population or road miles), Commission actions and policies will overlook important needs in other parts of rural communities. Deere agrees with the Rural Wireless Association's view that "[a] straight population-based metric allows carriers to serve those in highly profitable population centers and leave residents in outlying areas underserved or not served at all. Further, a population requirement is not an

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<sup>23</sup> See Bill Tiedje, "Connecting fields will help farmers fully utilize latest ag technology," Iowa Farmer Today, June 23, 2016.

<sup>24</sup> See <http://www.connectedtx.org/testimonials>.

appropriate metric for today's wireless industry. It fails to accurately account for areas where there is great need for mobile broadband – like agricultural, energy production, and tourism centers – but where there are few permanent residents.”<sup>25</sup> In other words, in order to manage the availability of wireless broadband on cropland, the Commission must measure it first.

Deere urges the Commission to take advantage of existing information on U.S. cropland locations in constructing its assessment of what areas lack wireless broadband and are eligible for MF-II support. For example, the Commission could look to USDA's major crop mapping information, updated annually, which depicts crop operation boundaries in the United States.<sup>26</sup> One of the USDA maps consolidates all cropland.<sup>27</sup> Using cropland maps to target support has the advantage of data accuracy on a granular basis, one of the Commission's goals for distributing MF-II support. As the *Staff Report* explains, their methodology assumes that population and roads are uniformly distributed throughout the area of a census block.<sup>28</sup> Although Staff anticipates that it can “establish the actual covered road miles in a MF-II reverse auction,” it cannot do the same for population, due to the lack of “publicly-available data on the distribution of population, or households, at a sub-census-block level.”<sup>29</sup> By overlaying cropland maps with 477 provider-certified coverage maps, the FCC (and potential providers) can determine which cropland areas would benefit from expanded 4G LTE coverage.

#### **VIII. MF-II Bidding and Coverage Units Should be Based on a Weighted Average of Population and Cropland Acreage**

Although the Commission's FNPRM on MF-II tentatively proposed allocating funds based solely on population,<sup>30</sup> the 2011 NPRM sought comment on the use of population and workplaces, instead of or in combination with road miles, or other units, to target MF-II funding.<sup>31</sup> The *Staff Report*, as discussed above, considers population, land area, and road mileage as potential allocation factors but acknowledges that households cannot be distributed at the sub-census block level. Because none of these methods of allocation would take account of the specific need for LTE service on cropland, where many rural Americans work, they fail to achieve the Commission's stated goal of “mobile networks capable of delivering mobile

<sup>25</sup> See *Ex Parte* Notice of Rural Wireless Association in WT Docket No. 10-208, WC Docket No. 10-90, WC docket No. 16-143, WT Docket No. 05-265 (Aug. 8, 2016) at 1-2.

<sup>26</sup> See, e.g. <http://www.usda.gov/oce/weather/pubs/Other/MWCACP/namerica.htm>. These maps are released annually.

<sup>27</sup> Consolidated cropland maps are available at <https://nassgeodata.gmu.edu/CropScape/>.

<sup>28</sup> WTB Staff Report, at 9-10.

<sup>29</sup> WTB Staff Report, at 10.

<sup>30</sup> *Connect America Fund; A National Broadband Plan for Our Future; ETC Annual Reports and Certifications; Establishing Just and Reasonable Rates for Local Exchange Carriers; Universal Service Reform – Mobility Fund; Developing a Unified Intercarrier Compensation Regime*; WC Docket Nos. 10-90, 07-135, 14-58, WT Docket No. 10-208, CC Docket No. 01-92, Report and Order, Declaratory Ruling, Order, Memorandum Opinion and Order, Seventh Order on Reconsideration, and Further Notice of Proposed Rulemaking, 29 FCC Rcd 7051, para. 241 (2014) (“*CAF FNPRM*”).

<sup>31</sup> 2011 *CAF Order*, at para. 1122, 1134.



broadband and voice service in areas where Americans... work...”<sup>32</sup> Adoption of such methods would also do little to address the growing need for broadband in the rural agricultural sector as detailed in the Senate Letter. Likewise, while a population assessment might identify coverage gaps for commercial enterprises in a small, rural town, it would overlook gaps in croplands, where equal or greater economic activity is occurring — or has the potential to occur with adequate coverage.

Accordingly, Deere proposes that the Commission base MF-II bidding and coverage units on a weighted average of population and cropland acreage. The specific weighting factors should be selected so that, on average, population and cropland area are given equal weight. These factors can be calculated once the amount of cropland area in eligible census blocks has been determined.<sup>33</sup>

This approach would also require adjustment of construction milestones and coverage requirements to ensure that carriers actually construct networks that cover cropland and not just population centers. Deere’s suggested revisions to the proposed MF-II rules to accomplish these goals are attached hereto as Exhibit 2. Deere offers this modified rule language for the staff’s review as it considers what specific rule changes should be made to accomplish the goals outlined herein.

Targeting MF-II support only to population centers will not increase wireless broadband deployment on cropland. Today, only about one percent of the U.S. population *lives* on farms.<sup>34</sup> Any MF-II metric that relies on census blocks based on population counts therefore will skew support to where rural Americans live, but not where they work, on farms.

### Conclusion

Cropland is captive to the geographies, soils, climate, water and land availability required for growing food, leaving the farmer and farm workers and the many others working in the U.S. agricultural sector wholly dependent on whatever public infrastructure is made available to croplands. This is as true of broadband deployment today as it was of rural electrification in the 20th Century. Connectivity in cropland is necessary to serve the significant U.S. agricultural sector to meet growing worldwide demand for food. As recently stated by Senators Wicker and Manchin and the bipartisan group of 24 other Senators, the nation cannot afford to leave these areas unserved by mobile broadband. These facts, coupled with the USF mandate for comparable telecommunications and information services to be provided in all regions of the

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<sup>32</sup> 2011 CAF Order, at para. 53.

<sup>33</sup> The *Staff Report* estimates the population in eligible census blocks, including partial census blocks, at 3,090,203. *Staff Report*, p. 17. So, for example, if it were determined that these same blocks contained 309,020 square miles of cropland in the aggregate, the population would be weighted at 1.0 and the cropland would be weighted at 10.0 for purposes of determining bidding and coverage units.

<sup>34</sup> Jayson Lusk, *Why Industrial Farms Are Good for the Environment*, THE NEW YORK TIMES (Sept. 23, 2016), [http://www.nytimes.com/2016/09/25/opinion/sunday/why-industrial-farms-are-good-for-the-environment.html?\\_r=0](http://www.nytimes.com/2016/09/25/opinion/sunday/why-industrial-farms-are-good-for-the-environment.html?_r=0).

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country, reinforces the imperative for Commission MF-II policies to recognize cropland/agriculture.

/s/

Mark N. Lewellen

Deere & Company  
Manager, Spectrum Policy

cc     Jim Schlichting  
         Margaret Wiener  
         Paroma Sanyal  
         Sue McNeil  
         Charles Eberle  
         Gary Michaels  
         Kelly Quinn

United States Senate  
WASHINGTON, DC 20510

July 11, 2016

The Honorable Tom Wheeler, Chairman  
Federal Communications Commission  
445 12<sup>th</sup> Street, S.W.  
Washington, DC 20554

Dear Chairman Wheeler:

As representatives of states with significant agricultural activity, we share the goal of ensuring that access to high-quality communications networks in rural America remains a top priority for the Commission.

More than ever before, U.S. farmers and ranchers are demanding reliable, high-speed mobile broadband services. Mobility is essential for new precision agriculture technologies to deliver productivity gains and environmental sustainability. These technologies are transforming U.S. agriculture as American farmers and ranchers seek to feed, fuel, and clothe an ever-increasing global population using limited land, water, and other resources.

We applaud the Commission's recent decision to allow rate-of-return carriers to access support for "standalone" broadband facilities. This step will help encourage carriers to deploy modern broadband-capable wireline networks in rural areas. Importantly, this is necessary as consumers increasingly rely on wireless services and are "cutting the cord" to shift away from wireline voice, and soaring mobile broadband relies on sufficient backhaul, often provided by these wireline networks. Going forward, sufficient support must also be available to preserve and expand mobile voice and broadband.

Significant work remains to ensure that broadband services are available in rural America and reasonably comparable to services enjoyed in urban areas. Simply stated, broadband, particularly high-speed mobile broadband, is not readily available in many rural areas or could be at risk absent the right policies and support through the Universal Service Fund (USF). While progress has been made in the deployment of broadband, significant portions of rural areas have been left behind. According to the FCC, 87 percent of rural Americans (52.2 million) lack access to mobile broadband with minimum advertised speeds of 10 Mbps/1 Mbps, compared to 45 percent of those living in urban areas.

Without the certainty that essential mobile broadband infrastructure will be deployed and maintained, investments in agricultural productivity will be delayed or bypassed altogether, and the potential efficiencies and benefits to rural communities will be lost. The extension of high-speed mobile and backhaul facilities to agricultural croplands and ranch lands must keep pace

with the ongoing deployment of technology in the field. Increasing numbers of modems in the field means a growing demand for connectivity in the areas in which they operate.


The expansion of rural broadband should be a top priority of federal and state policymakers, as expanded deployment in rural areas will address important economic, educational, health care, and public safety goals. Ongoing USF reform can provide a mechanism for enabling mobile broadband access in rural communities where “people live, work, and travel” that is truly comparable to broadband services provided in urban and suburban areas. To accomplish this goal, USF should support mobile broadband at a minimum of today’s level to close the coverage gap while preserving existing service.

In this regard, we ask you to give special attention as you work to establish Phase II of the USF’s Mobility Fund (MF). Given the importance of mobile services today, the MF should be retained and updated to ensure that funding will promote new mobile broadband deployment in unserved rural and agricultural areas and preserve and upgrade mobile broadband where it is currently available. Importantly, the FCC must rely on realistic measurements of network experience on the ground to determine areas to support.

Croplands and ranch lands have lagged behind in adequate mobile coverage, even as demand for coverage has grown. To address this coverage gap, we urge you to consider a metric of broadband access in croplands (and farm buildings), or some other geographic measurement, in addition to road miles, to identify these areas of greatest need. “Cropland” coverage can be assessed using United States Department of Agriculture data for crop operations, the United States Geological Survey’s Land Use classification, or other databases.

Agriculture is a significant generator of economic activity in our states. We greatly appreciate your efforts to ensure that the latest mobile broadband services are provided to all Americans, including those in agriculture whose livelihoods depend on it.

Sincerely,



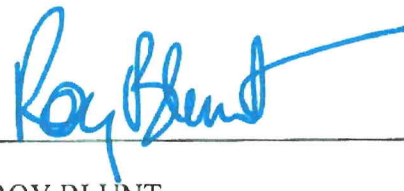
ROGER F. WICKER  
United States Senator



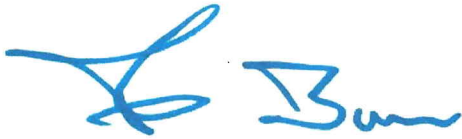
JOE MANCHIN, III  
United States Senator



TAMMY BALDWIN  
United States Senator



ROY BLUNT  
United States Senator



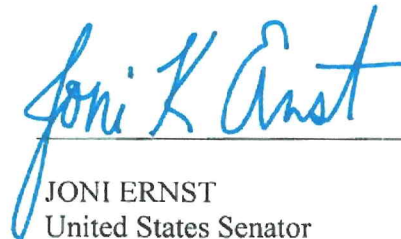
RICHARD BURR  
United States Senator



SHELLEY MOORE CAPITO  
United States Senator



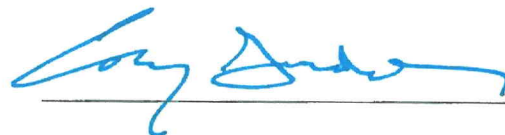
STEVE DAINES  
United States Senator



JONI ERNST  
United States Senator



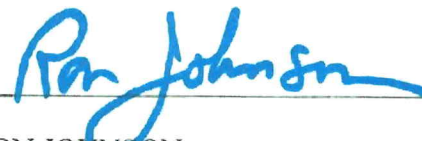
DEB FISCHER  
United States Senator



CORY GARDNER  
United States Senator



HEIDI HEITKAMP  
United States Senator

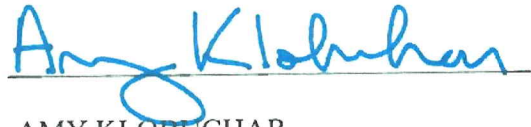


RON JOHNSON  
United States Senator





ANGUS S. KING, JR.  
United States Senator



AMY KLOBUCHAR  
United States Senator



CLAIRE MCCASKILL  
United States Senator



JERRY MORAN  
United States Senator



GARY PETERS  
United States Senator



PAT ROBERTS  
United States Senator



MARCO RUBIO  
United States Senator



THOM TILLIS  
United States Senator



DAVID VITTER  
United States Senator



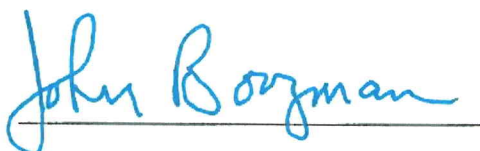
MARK WARNER  
United States Senator




RON WYDEN  
United States Senator



THAD COCHRAN  
United States Senator



JOHN BOOZMAN  
United States Senator



MARK KIRK  
United States Senator

Proposed Mobility Phase II Rules (excerpted from FCC 14-54 rel. June 10, 2014, available at [https://apps.fcc.gov/edocs\\_public/attachmatch/FCC-14-54A1.pdf](https://apps.fcc.gov/edocs_public/attachmatch/FCC-14-54A1.pdf))

§ 54.1012 Geographic Areas Eligible for Support.

(a) Mobility Fund Phase II support may be made available for census blocks or other areas identified as eligible by public notice.

(b) Coverage units for purposes of conducting competitive bidding and disbursing support based on designated population and Major Cropland will be identified by public notice for each area eligible for support. Coverage units shall be based on a weighted average of population and Major Cropland within eligible areas. The weighting factors will be selected to accord equal weight, on average, to each of these two factors.

§ 54.1016 Public Interest Obligations.

(a) Deadline for Construction. A winning bidder authorized to receive Mobility Fund Phase II support shall, no later than three years after the date on which it was authorized to receive support, submit data covering the area for which support was received demonstrating mobile transmissions supporting voice and data to and from the network covering 75 percent of the designated population and 75 percent of acres of Major Cropland in the area deemed uncovered, or an applicable higher percentage established by public notice prior to the competitive bidding, and meeting or exceeding the following:

- (1) Outdoor minimum data transmission rates of 800 kbps uplink and 2000 kbps downlink;
- (2) Transmission latency low enough to enable the use of real time applications, such as VoIP.

(b) Coverage Test Data. Coverage data submitted in compliance with a recipient's public interest obligations shall demonstrate coverage of the population and Major Cropland designated in the public notice detailing the procedures for the competitive bidding that is the basis of the recipient's support. Any drive tests or scattered site tests submitted in compliance with a recipient's public interest obligations shall be in compliance with standards set forth in the public notice detailing the procedures for the competitive bidding that is the basis of the recipient's authorized support. Any drive tests shall demonstrate required transmission rates at vehicle speeds appropriate for the roads covered by the tests.

§ 54.1019 Annual Reports.

(a) A winning bidder authorized to receive Mobility Fund Phase II support shall submit an annual report no later than July 1 in each year for the ten years after it was so authorized. In addition to the information required by § 54.313, each annual report shall include the following, or reference the inclusion of the following in other reports filed with the Commission for the applicable year:

- (1) Electronic shapefiles of the outdoor minimum data transmission rates requirement coverage polygons illustrating the area newly reached by mobile services at a minimum resolution of 100 meters;
- (2) A list of relevant census blocks previously deemed unserved, with total resident population and resident population residing in areas newly reached by mobile services (based on Census Bureau data and estimates), and total acreage of Major Cropland and acreage newly reached by mobile services (based on Department of Agriculture data on Major Cropland);
- (3) If any such testing has been conducted, data received or used from drive tests, or scattered site testing, analyzing network coverage for mobile services in the area for which support was received;
- (4) Certification that the winning bidder offers service in supported areas at rates that are within a reasonable range of rates for similar service plans offered by mobile wireless providers in urban areas;
- (5) Any applicable certifications and showings required in § 54.1014; and
- (6) Updates to the information provided in § 54.1015(b)(2)(v).